



This ceramic wire was developed to produce windings with high functional reliability, i.e. windings that retain their functionality even under thermal overload (peaks of up to 1000°C).

The KD500 owes the ever-increasing demand to its unique properties, which enable it to be used in numerous high-tech applications, often preventively in high-temperature safety elements.

KD500 High temperature winding wires with ceramic insulation (500°C)

Applications:

Special windings for transformers, chokes, coils or sensors that have to function continuously in the low-voltage range at elevated temperatures of up to 500°C (peaks up to 1000°C). Various safety applications that have to withstand a fire of up to 600°C without destruction (mechanical heating, short circuit, heat risks, etc.).

Structure:

Conductor:	Copper/nickel plating 27%
	Other conductor materials on request. Special conductor materials provided by the customer can also be processed. Corresponding tests are carried out in the factory
Insulation:	Ceramic in thicknesses of 5-20 µm
Color:	gray
Dimensions:	AWG 41 to AWG 18 or 0.07 mm to 1.0 mm
Linear density:	Like that of copper = 8.92 kg/dm ³ per km
Nickel migration:	At temperatures >315°C, the KD500 is subject to nickel penetration into the copper. This effect is negligible with larger diameters but considerable with wire diameters <0.15 mm (AWG 34) after an operating time of 48 hours with the consequence of an increase in resistance.

Heat resistance:

Permanent -90°C to +500°C (2500 hours min.) Short-term up to 800°C (tested for 10 days or 240 hours) and peaks up to 1000°C.

Electrical values:

Test voltage 150V AC, corresponding to 212V DC, test with rolled wire Bending radius = 20 x

diameter. For bending radius < 20 x diameter please enquire Breakdown voltage >150V AC
Resistance max. $3 \cdot 10^{-6} \Omega \cdot \text{cm}$ at 20° C after ageing at 500°C

Further properties

Moisture resistance	The ceramic is sensitive to moisture. It may need to be impregnated in the finished state.
Chemical resistance:	The ceramic is highly resistant to solvents and organic oils
Radiation resistance	High Resistance.
Flammability:	Non-flammable. At temperatures >1000°C the wire can melt but not burn.
Bending radius:	5x outer diameter (see table)
Halogen-free:	Yes
Outgassing:	None

Precautions of use

Ceramic is very different from traditional insulations. It is a rigid, hydrophilic material that requires special care when using. The KD 500 ceramic wire must be handled with care, without mechanical mistreatment (folding, traction, etc.).

Storage

The KD 500 ceramic wire must be stored in a dry environment.

Winding

We recommend using a motorized unwinder controlled by a dancer or a movable pulley, unspooling in a horizontal orientation. The wire must be wound at a constant speed to avoid any back-and-forth jerking. The wire should not be subjected to torsional stress during winding. The wire should not scrape fixed parts (example: wire guide, the wires against each other). The maximum force should remain constant and comply with the recommendations in the table above.

How to strip the wire

The layer of ceramic insulations is very thin and adherent to the conductor, standard stripping tools cannot be used. The insulation must be removed by abrasion by rubbing with sandpaper with very fine grain is recommended for all models.

Connection

The conductor of the KD 500 ceramic wire is made with nickel-plated copper. It can be connected in various ways:

- > By silver brazing
- > By splicing or wrapping
- > After installation

Remarks

After installation the KD 500 ceramic wire must no longer be subjected to movement or mechanical stress. If vibrations occur during use, it is recommended that the winding be embedded in refractory cement. The KD 500 ceramic wire should not be subjected to moisture.

Dimensions:

Item number	Diameter [mm]	AWG Size	Outer diameter [mm]	Weight [g/km]	Length [m/ kg]
KD500/007RR	0,07	41	0,091	34	29 800
KD500/010RR	0,10	38	0,118	71	14 000
KD500/012RR	0,12	36	0,138	101	9 901
KD500/015RR	0,15	34	0,168	161	6 210
KD500/017RR	0,17	33	0,188	202	4 950
KD500/020RR	0,20	32	0,218	286	3 500
KD500/025RR	0,25	30	0,268	446	2 240
KD500/030RR	0,30	28	0,319	637	1 570
KD500/035RR	0,35	27	0,369	862	1 160
KD500/040RR	0,40	26	0,419	1 136	880
KD500/045RR	0,45	25	0,469	1 433	698
KD500/050RR	0,50	24	0,519	1 754	570
KD500/055RR	0,55	23	0,569	2 105	475
KD500/060RR	0,60	22	0,619	2 500	400
KD500/065RR	0,65	22	0,669	2 899	345
KD500/070RR	0,70	21	0,719	3 356	298
KD500/080RR	0,80	20	0,820	4 348	230
KD500/090RR	0,90	19	0,920	5 814	172
KD500/100RR	1,00	18	1,020	7 194	139

Diameter [mm]	Max. permissible tensile force (N)	Minim.bending radius [mm]	Resistance at 20°C [Ω/m]
7/100	0,022	0,50	8,261
10/100	0,044	0,63	4,060
12/100	0,065	0,73	2,790
15/100	0,102	0,88	1,768
17/100	0,131	0,98	1,370
20/100	0,183	1,13	0,984
25/100	0,287	138	0,626
30/100	0,413	1,64	0,436
35/100	0,564	1,89	0,319
40/100	0,739	2,14	0,244
45/100	0,933	2,39	0,193
50/100	1,150	2,64	0,156
55/100	1,390	2,89	0,129
60/100	1,660	3,14	0,108
65/100	1,950	3,39	0,092
70/100	2,260	3,64	0,080
80/100	2,960	4,15	0,061
90/100	3,740	4,65	0,048
100/100	4,620	5,15	0,039